

Answer to leftover chat room question from *Jacob Hochhalter's* Seedling Seminar presentation, November 17, 2015

Question: Question/comment on the geometry uncertainty case. You indicated that closer examination of the actual specimen, you found that the hole location was a micron off and when the actual geometry was included you got better agreement. Maybe semantics but that seems like model calibration rather than reducing uncertainty. The uncertainty is still there and needs to be quantified. There may even be uncertainty in the pin loaded hole (tilted pin, contact, etc.).

Jacob Hochhalter:

First, the hole being referred to was on the order of 100 microns, not 1. It is certainly not the case that uncertainty, of all sources, was reduced. This example pertains only to the reduction in uncertainty as it pertains to geometric uncertainty in the as-manufactured part. In other words, instead of considering the engineering drawing and all possible combinations of as-manufactured parts that could come from that, a big uncertainty quantification problem, we simply measured precisely the as-manufactured part removing the need to consider all other possible parts that were never in existence. It turns out in this case that the crack path prediction was highly sensitive to changes in geometry and resolving those led to a much better prediction, case-by-case, because we had removed most of the uncertainty in the as-manufactured geometry.